L Number	Hits	Search Text	DB	Time stamp
-	1174	configur$5 adj3 IP adj5 address$3	USPAT; US-PGPUB	2004/09/24 10:33
-	283	(configur$5 adj3 IP adj5 address$3) and @ad<19991223	USPAT; US-PGPUB	2004/09/24 10:34
-	116	((configur$5 adj3 IP adj5 address$3) and @ad<19991223) and ((differen$4 or foreign) adj3 network$1)	USPAT; US-PGPUB	2004/09/24 10:44
-	17	("5410543" | "5412654" | "5596723" | "5598536" | "5692124" | "5708654" | "5757924" | "5790548" | "5835725" | "5852721" | "5854901" | "6061739" | "6070187" | "6130892" | "6167513" | "6189042" | "6324580").PN.	USPAT	2004/09/24 11:09

C:\APPS\EAST\Workspaces\09-742006 Configure IP address for different or foreign network.wsp

US-PAT-NO: 6591306

DOCUMENT-IDENTIFIER: US 6591306 B1

TITLE: IP network access for portable devices

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Abstract Text - ABTX (1):

    A guest station on a **foreign network** is provided IP access by the **foreign (i.e., hosting) network** without changes to the guest station, including settings for IP address, next-hop-router (gateway), and netmask. An access router automatically detects guests and their home-IP-address and assigns a local care-of address to every guest. For outgoing traffic, the router replaces the guest's original/home IP address with the care-of address, and the reverse is performed for incoming traffic. IP traffic may thus be initiated, and responses received at the temporary current location without having to change its IP address.

Application Filing Date - AD (1):
    19990721

Brief Summary Text - BSTX (57):

    The station 210 is **configured manually with its own IP address** (e.g. 138.15.103.21), a netmask (e.g. 255.255.255.0) and a Gateway IP address (e.g. 138.15.103.52) pertaining to router 502. These settings are very specific to the networking environment in which the machine is to be used. The addresses are assigned by the local systems-admin, and are put into the stations 210-240. They usually remain unchanged while the station is connected to its regular network.

Brief Summary Text - BSTX (77):
    Guest Station--**Foreign Network**

Brief Summary Text - BSTX (82):

    FIG. 8 shows a situation involving a guest station on a **foreign network**. In FIG. 8, station 210 is a guest station on the third network 400. Station 210 is a regular station of the first network 200. Station 210 is now connected to network 400. Since the third network 400 is not the regular network of station 210, the third network 400 is foreign to the station 210. From the perspective of station 210, therefore, a connection has been made to a **foreign network**. From the perspective of the third network 400, a guest station has been connected to it. In practical terms, the third network 400 may be thought of as a hotel or a conference center that provides IP connectivity to its guests. This service may be referred to as a service of hosting a guest station, and

the network 400 may be thought of as a hosting network.

Brief Summary Text - BSTX (86):
   The station 210 is **configured manually with its own IP address** (e.g. 138.15.103.21), a netmask (e.g. 255.255.255.0) and a Gateway IP address (e.g. 138.15.103.52) pertaining to router 502.

Brief Summary Text - BSTX (104):
   The packet is carried across the internet 500 and is provided to router 502 because that is the router that receives all packets for stations expected to be in network 200. Router 502 receives the packet and judges from its routing tables that the IP address for station 210 is an IP address on network 200. Router 502 transmits the packet on network 200, but station 210 is not connected to the network. The reply packet from station 310 to station 210 therefore never reaches station 210 because station 210 is connected as a guest on **foreign network** 400.

Brief Summary Text - BSTX (107):
   Furthermore, a solution to the problem of hosting a guest station should permit security for the **foreign network** (also referred to as the hosting network, from its own perspective) to avoid malicious attacks from guests.

Brief Summary Text - BSTX (109):
   The use of Dynamic Host Configuration Protocol (DHCP) is one mechanism that may be considered for the support of a guest station on a **foreign network**. DHCP, however, is disadvantageous in that it does not consider security aspects either for the host network or for the guest station.

Brief Summary Text - BSTX (121):
   It is therefore an object of the invention to solve the problem of hosting a guest station in a manner in which the guest simply plugs the guest station into the **foreign network** and gains instant IP connectivity. Another object is to achieve this even when the **foreign network** uses a broadcast LAN such as an Ethernet. Yet another object of the invention is to achieve the foregoing without change to the previously set network configuration of the portable device, including IP address, netmask, next-hop-routers (gateways) as well as settings for the Domain Name Service (DNS). It is a further object of the invention to achieve instant IP connectivity in a manner which prevents malicious attacks to the hosting network by the guest station. An additional object of the invention is to achieve the foregoing connectivity in a manner which permits the guest station, if desired, to provide for security against malicious intrusion or attacks from the **foreign network**. Furthermore, it is also an object of the invention to provide for IP access for a guest station without the need for a large pool of IP addresses. Finally, it is an important object of the invention to provide for IP access for a guest station without support from the guest station and without expecting support from the guest's regular network.

Drawing Description Text - DRTX (10):
  FIG. 8 shows the networks of FIG. 5 in which one station is a guest station
of a **foreign network**.

Detailed Description Text - DETX (6):
  It will be appreciated that, herein, a target machine is a station to which
the guest station desires to send a packet; the **foreign network** (as seen by the
guest station) may be referred to as the host network interchangeably; a
care-of address may be referred to as a c/o address; the home network of the
guest station may be referred to interchangeably as the regular network of the
guest station; a guest station may be referred to simply as a guest; and the
hosting organization may be an organization or person that provides the service
of hosting to the guest station, or it may be a third party which is contracted
to provide such services.

Detailed Description Text - DETX (39):
  Returning to FIG. 17, the guest station 210 had previously sent out an ARP
request to its predefined router IP address for router 502 (i.e., IP address
138.15.103.52). In step 1740, guest station 210 detects an ARP reply and so
processing continues to step 1770. The ARP reply, however, is actually a
proxy-ARP reply sent from access router 900. This proxy-ARP reply will make
the guest station 210 think that the HW address for router 900 is the HW
address of the next-hop machine of its home network, in this example router
502. In step 1770, the reply received by guest station 210 is analyzed to
obtain the next-hop HW address. The next-hop HW address is the HW address for
the access router 900. In step 1780, the guest station 210 sends the outbound
IP packet with the outbound IP packet address of 141.20.20.31 (namely, the IP
address of destination station 310) to the next-hop. It does not matter that
the guest station 210 thinks that this is the HW address for router 502. The
important effect is that the packet is sent to a next-hop even though the
packet is sent from a guest station that is **foreign to be hosting network** 400.

Detailed Description Text - DETX (106):
  To establish an IP-over-IP tunnel between two machines 128.1.1.1 and
128.2.2.2, a pseudo-network-interface tun10 must be created and **configured (the
IP addresses** are those that belong to the Ethernet interfaces that are
associated with those tunnel endpoints).

Detailed Description Text - DETX (140):
  Furthermore, flexible mechanisms for adapting guests to local network
configurations, like addresses of DNS servers or printers, ease the work of the
local network administrator because he does not have to push information about
new or temporarily **different network** configurations into every user's local
system.